

Amendments to the Claims:

1. (Cancelled)

2. (Currently Amended) An ~~The~~ image guided surgery system ~~as set forth in claim 1 wherein the~~ comprising:

a low cost integrated computer includes including:

5 a portion of image guided surgery software that provides minimal user functionality, full user functionality being enabled by adding the application specific software ~~obtained from the digital medium of the software-integrated disposable kit;~~

10 a software-integrated disposable kit including:

a digital medium with the application-specific software; and,

instrumented disposable surgical tools;

15 a tracking system which locates the surgical tools while in use; and

a display used in conjunction with the computer.

3. (Currently Amended) The image guided surgery system as set forth in claim ~~1~~ 2 further including:

a low cost mobile cart that holds at least the computer, display, and standard peripherals.

4. (Currently Amended) The image guided surgery system as set forth in claim ~~1~~ 2 wherein the low cost integrated computer includes:

a drive which receives and reads the digital medium.

5. (Currently Amended) An ~~The~~ image guided surgery system ~~as set forth in claim 1 further~~ including:

software-integrated disposable kits including:

5 a digital medium with the application-specific software; and,

instrumented disposable surgical tools;

a computer which receives the digital medium and processes the application specific software;

10 a tracking system which tracks the surgical tools during a surgical procedure;

a display used in conjunction with the computer; and
a means for deactivating or encrypting the digital medium against reuse at the end of ~~a~~ the surgical procedure.

6. (Currently Amended) The image guided surgery system as set forth in claim ~~4~~ 5 wherein the computer includes:

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an input/output interface for capturing still-images and/or live video from an imaging device;

5 a graphic input/output interface for connecting to the display;

an interface for interconnection with at least one of a wired user input device and a wireless user input; and,

10 an interface for interconnection with tracking sensors for monitoring position and movement of the instrumented surgical tools.

7. (Currently Amended) An ~~The~~ image guided surgery system ~~as set forth in claim 1 wherein the~~ comprising:

a low cost integrated computer;

5 a software-integrated disposable kit ~~further includes~~ including:

a label to identify a particular surgical procedure to be performed using the kit;

10 sterile packaging in which ~~the~~ instrumented disposable surgical tools are contained in sterile condition;

other accessories in sterile condition in sterile packaging;

user input devices; and

15 ~~wherein the digital medium is a~~ disposable one-time use digital medium readable by the computer and ~~contains~~ containing a portion of image guided surgery software specific to the particular surgical procedure;

20 a tracking system which locates the surgical tools
while in use; and,
a display used in conjunction with the computer.

8. (Currently Amended) The image guided surgery system as set forth in claim 9 wherein the user input devices include:

5 a disposable, sterilizable, wireless peripheral for use by a surgeon at the surgical site for remote communication with the computer.

9. (Currently Amended) An ~~The~~ image guided surgery system ~~as set forth in claim 1 wherein~~ comprising:

a low cost integrated computer;

a software-integrated disposable kit including:

5 instrumented disposable surgical tools;

a digital medium with application-specific software, the digital medium ~~includes~~ including:

10 a preprogrammed one-time-use application specific software module to be used in surgery; and

a preprogrammed software module describing the surgical tools, implants, and other accessories;

15 a tracking system which tracks the surgical tools during surgery; and

a display used in conjunction with the computer.

10. (Currently Amended) An ~~The~~ image guided surgery system ~~as set forth in claim 1 wherein the~~ comprising:

a low cost integrated computer;

software-integrated disposable kits including:

5 instrumented disposable surgical tools;

and,

a digital medium which includes preprogrammed software describing dimensional specifications of each of the tools, probes, guides,

10 and any other instrumented accessories contained in
the kit;

a tracking system which tracks the surgical tools
while in use; and,

a display connected with the computer.

11. (Currently Amended) An ~~The~~ image guided
surgery system ~~as set forth in claim 1 wherein the~~ comprising:

an integrated computer;

software-integrated disposable kits including:

5 a digital medium ~~includes~~ preprogrammed
with software with of 3D virtual representations,
images, or information of instrumented surgical
tools, accessories, implants, and any associated
hardware contained in the kits used to create 3D
10 virtual representations of the surgical tools in the
images on the display;

a tracking system which locates the instrumented
surgical tools during surgery; and

a display used in conjunction with the computer.

12. (Currently Amended) The image guided surgery
system as set forth in claim 1 5, the digital medium includes:

preprogrammed software for superimposing instrumented
tools, accessories, implants, and associated hardware on the
5 images in a wireframe or a user selected custom format.

13. (Currently Amended) The image guided surgery
system as set forth in claim 1 5 wherein the digital medium
includes:

5 an area which stores the software application which
enables full user functionality;

an area which stores specifications and
characteristics of the instrumented surgical tools;

an area which stores 3D virtual representations,
images, or information of the instrumented tools and accessories
10 contained in the kit; and

an area which stores additional information relevant to a particular surgical procedure.

14. (Currently Amended) The image guided surgery system as set forth in claim ~~1~~ 5 wherein the tracking system includes:

5 one of acoustic sensors, infrared sensors, video cameras, that are utilized to determine a location of the instrumented surgical tools.

15. (Currently Amended) The image guided surgery system as set forth in claim ~~1~~ 5 wherein the tracking system includes:

5 a mobile cart for positioning ~~the~~ a tracking camera in ~~the~~ a surgical suite.

(16. (Cancelled))

17. (Currently Amended) The method as set forth in claim ~~16~~ 20 further including:

5 using the computer as a planning station before a surgical procedure to define surgical entry points and trajectories.

18. (Currently Amended) The method as set forth in claim ~~16~~ 20 further ~~includes~~ including:

5 archiving on the digital medium a record or history of the performed surgical procedure, including the downloaded diagnostic images, selected instruments, implants, length of surgical time, notes, or other relevant information obtained during the surgical procedure.

19. (Currently Amended) The method as set forth in claim ~~18~~ 20 further ~~includes~~ including:

replaying archived data for review and diagnostic follow-up.

20. (Currently Amended) ~~A~~ The method as set forth in claim 16 further including: of image guided surgery using a computer, a one-time-use surgical application specific kit that contains a digital medium with application specific software and
5 instrumented surgical tools and accessories, a tracking system that locates the instrumented surgical tools while in use, and a display, the method comprising:

at a surgical site, removing the digital medium from the kit and inserting it into the computer;

10 augmenting software on the computer with software from the digital medium to process diagnostic images, register the diagnostic images to a patient's anatomy, register different sets of imaging modalities to each other, and track locations of the instrumented surgical tool;

15 during a surgical procedure, displaying a virtual representation of the instrumented surgical tool on the image, correlating movement of the virtual tool representation on the image with movement of the corresponding instrumented tool in physical space;

20 disposing of the tools and deactivating or encrypting the digital medium against reuse after the surgical procedure.

21. (Currently Amended) The method as set forth in claim 16 20 further including:

preventing reuse of the disposable surgical tools.

22. (Currently Amended) The method as set forth in claim 16 20 further including:

disposing of the surgical instruments and the digital medium without reuse after the surgical procedure.

23. (Currently Amended) A method of image guided surgery comprising:

5 providing a kit which includes (1) instrumented surgical tools and accessories and (2) a digital medium which is preprogrammed with (i) at least a portion of a graphics processing program and (ii) information concerning the surgical tools and accessories;

at a surgical site, removing the ~~secure~~ digital medium from the kit and inserting it into a processor which, between software with which the processor is preprogrammed and the software from the digital medium, processes electronic medical diagnostic images, correlates a coordinate system of a patient with a coordinate system of the diagnostic images, tracks a location of the instrumented surgical tools in the coordinate system of the patient, and translates the instrument position into the coordinate system of the diagnostic image.

24. (Original) The method as set forth in claim 23 wherein the surgical kit further includes:
medical appliances, and
a user control for interconnection with the processor
to control image displays.

25. (Original) The method as set forth in claim 24 further including:
prior to placing the surgical tools, the surgical appliances, and the user control in the surgical kit, packaging the surgical tools, the surgical appliances, and user control in sterile condition in sterile packaging.

26. (Original) The method as set forth in claim 24 further including:
prior to placing the digital medium in the kit, programming the medium, with information about the surgical tools and the medical appliances in the kit.

27. (Original) The method as set forth in claim 23 further including:
prior to placing the digital medium in the kit, programming the digital medium with dimensional information about and depictions of the surgical tools.

28. (Original) The method as set forth in claim 23 further including:

after the surgical procedure, deactivating the digital media against reuse.

29. (Original) The method as set forth in claim 28 further including:

after the surgical procedure, disposing the surgical instruments and the secure digital media without reuse.

30. (Currently Amended) A surgical kit comprising:
an identification of a surgical procedure to be performed using the kit;

5 instrumented surgical tools in sterile condition in sterile packaging which are used in the identified surgical procedure;

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10 medical appliances in sterile condition in sterile packaging which are used in the identified surgical procedure;
an operator control in sterile condition in sterile packaging for electrical interconnection with a graphics processor which is preprogrammed with image guided surgery software that provides limited user functionality outside a sterile field; and,

15 a digital media preprogrammed with a portion of an image guided surgery processing program and descriptive information concerning the tools and the appliances in the kit which is readable by the processor to upgrade the preprogrammed image guided surgery software to full user functionality for the identified surgical procedure.

31. (Original) An image guided surgery system comprising:

a set of surgical tools which are instrumented to be tracked during image guided surgery;

5 a processor which is preprogrammed with less than all of the software which is used for manipulating diagnostic images during the image guided surgery and for tracking the movement

of the instrumented surgical tools during the image guided surgery;

10 a digital media which is preprogrammed with a remaining portion of the software for processing the diagnostic image data and tracking movement of the instrumented surgical tools and with descriptive information concerning the instrumented surgical tools.

32. (Original) The system as set forth in claim 31 wherein the processor includes:

a reader which receives and reads the digital media.

33. (Original) The system as set forth in claim 32 wherein the processor further includes:

a deactivator which deactivates the digital media against reuse at the end of an image guided surgical procedure.

34. (Original) The system as set forth in claim 32 further including a surgical kit which includes:

an indication of a surgical procedure with which the kit is to be utilized;

5 the instrumented surgical tools for use in the indicated surgical procedure; and,
the digital media.

35. (Original) The system as set forth in claim 34 wherein the kit further includes:

surgical appliances used in the indicated procedure;
and

5 a user input control for controlling the processor, the user input control, the surgical appliances, and the surgical tools all being in sterile condition in the kit.

36. (Original) The system as set forth in claim 31 wherein the processor includes:

an interface for interconnection with a source of three-dimensional electronic diagnostic images;

- 5 an interface for interconnection with a human-readable display for displaying diagnostic images and superimposed representations of the surgical tools;
- an interface for interconnection with a user input control; and,
- 10 an interface for interconnection with optical sensors for monitoring position and movement of the instrumented surgical tools.

37. (Original) The system as set forth in claim 31 wherein the digital media includes:

- a first memory portion which stores the remain software portion;
- 5 a second memory portion which stores descriptive characteristics of the instrumented surgical tools;
- a third memory section which stores shape displays corresponding to the surgical tools for display superimposed on a display of the diagnostic image; and,
- 10 a fourth memory portion which carries additional information.

38. (Currently Amended) ~~In an~~ An image guided surgery system having a tracking system for tracking movement of surgical tools, a human-viewable display, and a computer with limited user functionality for retrieving surgical information, displaying and manipulating diagnostic images on the display, surgical planning, and superimposing representations of the surgical tools on the images on the display, ~~the improvement comprising~~ further including:

- a single use digital medium containing software to
- 10 upgrade the computer temporarily to full user functionality for a preselected surgical procedure; and,
- a means for disabling the software from being reused to upgrade the computer after the preselected surgical procedure.

39. (Previously Added) A method of implementing a computer-implemented procedure, the method comprising:

providing an integrated computer which receives a digital medium and which renders the digital medium inoperative;

5 opening a software-integrated disposable kit and removing a digital medium with application specific software and any associated elements;

inserting the digital medium into the integrated computer;

10 performing the procedure;

deactivating or encrypting the digital medium against reuse in the integrated computer;

removing the digital medium from the integrated computer.